THE PLACE OF THE CANAL IN A NATIONAL SYSTEM OF TRANSPORTATION

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It is often desirable after the discussion on a question has extended over a considerable period of years, with the inevitable result that many extraneous elements have been brought into it, to return to a review of the original causes of the discussion. Those who have been interested in the solution of the present question have had the very great difficulty of attempting to value properly the new factors introduced into the problem, as a result of the progressive changes in the methods of transportation and in the kinds and quantities of goods to be carried. The transportation problem, as it originally presented itself in the United States, had two most striking natural characteristics. First, the country was so vast that many miles of artificial transportation means were demanded. In no previous time was a people forced to think of transportation on such a vast plan and in such large units. Second, the commodities to be transported were to be made up very largely of raw materials. Nature had supplied her resources in such large quantities and in such diversity that the extractive industries promised for many years to be the most remunerative. But these products must necessarily move long distances, which on account of their low value and large bulk meant that the value density on our transportation routes would be very low. A failure to keep these two facts in mind has often led us to make assumptions and false comparisons between the transportation problem in the United States and in Europe. We have taken as a basis of comparison a European country and the United States, when a more proper unit for comparison would be a single state or group of states in the United States. Even then the differences in the natural resources, the character of the industrial life, the social and political ideas of the people, and the length of time that the regions have been settled make a comparison frequently futile. Just as there were two striking natural characteristics in our transportation problem, so too there were two important human characteristics in it. First, over this vast area was spread a vigorous but sparse population, eager to begin the exploitation of the great natural resources.

Each local community desired means of transportation to reach for distant markets and thus receive the large profits which were promised. The pressing demand for routes and the intense rivalry among the scattered settlements were therefore the most important causes for the extravagant expenditures which were made to secure transportation facilities, and also for the vacillation in favoring the different methods of transportation. Second, the amount of artificial capital was small, as in all new countries, but with this difference, that the amount of capital which was immediately needed to construct transportation routes was enormous. Transportation routes were a prerequisite to the whole industrial development, for the chief natural resources were inland and not on the coast line.

As a result of the above conditions, the people in their anxiety to reach markets were led to favor enthusiastically any means of transportation which seemed to promise immediate access to them. The exigencies of the moment were too great to think out any well developed plan or system of transportation. The most important problem was to secure local transportation routes, since nature had supplied great trunk lines in the form of long navigable rivers, the Mississippi, the Ohio, the Hudson, the Great Lakes, and the deep indentations of the coast line. This demand for transportation routes to connect local communities with the main natural routes led to enthusiastic support of turnpikes, canals, and railways. In many cases expenditures were made from which little or nothing was realized. In other cases routes were constructed which the industrial development did not then or prospectively justify. Ohio, for example, constructed three canals from Lake Erie to the Ohio River, not because the industrial conditions demanded three canals, but because there were in Ohio at that time three chief centers of population and sufficient votes to enact a canal bill could not be secured without providing a canal for each section of the state. The success of the Erie Canal was conclusive evidence to the people of many other localities in which a canal could be constructed that they too should build a canal. There is a striking similarity in the unreasoned enthusiasm displayed by the supporters of the movements of the two periods.

Local associations are again formed to further the construction of canals, and to improve internal waterways, but with this difference, that the organizations now include the population of a greater area and therefore give a greater momentum to the move-

ment. The members of these later day associations are as impatient with the inquisitive person who asks for the details of their plans as were the members of the earlier associations, and as eager to disprove with mere statements and "padded" statistics the findings of engineers as were the earlier enthusiasts.

The lack of capital in this early period led to large grants of land and powers to those private corporations which offered to supply local transportation routes in the form of turnpikes and railways. When these private corporations later realized that they would be compelled to depend very largely upon the private investor, and not the people, for the capital to complete and operate the roads, their efforts were directed to so conducting the business of transportation that a return to the private investor on his capital would be secured. Thus the bond between the people and those in charge of the transportation business was broken. It was no longer viewed by the enterprisers as a public business but as a private business. However, the people had not only as states but as individuals given large aid to these transportation enterprises, and for over a half century the contest between the people and the railroads was to continue in order to compel the latter to admit the public character of the business.

The railroad had from one point of view appeared at a most inopportune time. The canals in the United States had become by 1840 going concerns; that is, a great number of them had been completed and many were proving a success. Population was increasing very rapidly both by immigration and the natural increase. Many of the settled regions could not have canals and were forced to depend upon the highway. The demand for transportation routes was absolutely and relatively increasing. Many of the people in the long-settled regions were paying for the canals in the form of state taxes, the proceeds of which other localities were enjoying. The rapid industrial development of many sections which had canals soon made them inadequate means of transportation. Transportation was supplied on the canals only a few months in the year and then with no great certainty either as to the time of shipment or the quantity of goods which might be shipped. The business of transportation on the canals was never well organized, for the ideal of competition was held by the people during the canal period and the states were careful to preserve as large a degree of competition as possible. Had the same degree of systematization been applied to the transporta-

tion business on the canals as came to be applied to the railway business, or even to the transportation business on the early turnpikes, the history of the canals might have been different.

It is not, therefore, strange that the people were disposed to favor the railway as a means of solving their transportation difficulties. It answered most perfectly the demand for local transportation routes. It could be built anywhere and could be operated twelve months in the year. It could be constructed in 1 mile, 10 mile, or 1000 mile units, and appeared to have no limit as to the amount of goods which could move over it. It could supply not only new trunk lines but, what was of more importance, it could be built from each local community to the great natural trunk lines, the rivers, the lakes, and the ocean. It was the most available and therefore seemed the most desirable means of transportation. A few years' experience in constructing railways was sufficient to prove that the original cost of their construction was grossly underestimated. By the time that these facts became generally recognized, it was also evident that if the natural and artificial waterways were to perform their highest possible services as transportation agencies, they must be greatly improved. However, by this time, say 1865, the state governments, the only source from which funds were to be secured for the improvement of the waterways, had incurred heavy financial obligations as a result of the Civil War. Then too the states had not in many cases yet paid for the original cost of constructing the canals; scandals in expenditures for internal improvements had been so numerous, and the objections from the people not served by them so continued, that many of the states of the Middle West, in forming their new constitutions about 1850, fixed definite limits upon the power of the state to make expenditures for internal improvements.

The people were therefore forced, as they thought, to choose between railways and canals. The railways were not only available for each section but the capital for their immediate construction would be supplied by private individuals. No large number of people demanded the improvement of the canals, the management of which had in many cases proven a troublesome question. When the Ohio legislature leased the three canals of the state, it congratulated itself that "the eternal question of the canals was for a time solved." The choice which the people made was doubtless a wise one so far as the immediate future was concerned. Had we chosen to improve our waterways and contented ourselves with

fewer railways, our industrial development would probably have been more slow, but for that reason probably a more efficient use of our resources would have been made. However, the American people have never been suited, either by their mental constitution or physical vigor, to be strongly influenced by the arguments for the conservation of their natural resources. Had nature been less bountiful, we might have been less prodigal. The history of the progressive decay of our inland waterways is too well known to need comment. They ceased to be used, but least of all because the railways discriminated against them in rates. No such inducement was needed to persuade traffic to leave the waterways.

We are now beginning again where we began in 1800. The old problem of deficient transportation routes still confronts us. But as compared with 1800 there are these very great differences in the problem. In the early period railways were supplementary, now canals are to be supplementary. Canals in the early period were local transportation routes, now they are to be parts of through lines, for we still have the great natural trunk lines, the rivers, the lakes, and the ocean. In the early period the contest for transportation routes was between the people of localities, one section of the state contesting with another section of the same state for a canal. Now the conflict is between the people of large areas, such as the people of the Ohio Valley states contesting with those of the Missouri Valley for the improvement of their respective rivers first. There is again this difference in the two contests. In the earlier period a particular improvement could be carried out in one section without reference to what was done in a distant section. Now each is to be a part of a connected and improved whole, because we are providing for systems of waterway transportation, whereas we had in the early period single and independent parts. For example, it is not desirable to have a modern canal from the Great Lakes to the Ohio River until we have an improved Ohio River, nor much less desirable to have an improved Ohio River until we have an improved Mississippi River. There remains however general similarity in the character of the goods to be moved on our improved waterways. They may be conveniently classed under the two heads: (a) such bulky low value commodities as ore, coal, and lumber; (b) such manufactured or semi-manufactured goods as lend themselves to distribution by rail from large distributing centers, such for example as the glass products of the Pittsburg district and the clay products of the Ohio Valley.

If we inquire as to the direction of what we may call the streams of traffic of these classes of commodities, we may in a general way determine the part that the canals will play in the movement of these goods. In the first place, it should be stated that commodities of this description are of decreasing importance in our foreign trade, since more and more manufactured goods make up the bulk of our domestic exports. In the second place, those regions in the modern industrial nations where the extractive industries are practiced have sparse population and the manufacturing regions have a numerous population. It therefore follows from these two facts that the streams of this traffic are flowing in this country to the great centers of population, to be there transformed into manufactured wares. We may consider first the streams of coal traffic. These move in general in a north, northwest and northeast direction. The coal which reaches Norfolk and other near-by tide-water points over other than water routes can be carried by ocean to the industrial center about New York and the New England industrial center, but the artificial waterways can be of little service to this stream. The north and northwest streams of coal traffic already use the waterway to a great extent, that is, the Great Lakes; and, if a canal were constructed from the east end of Lake Erie to the Ohio River, doubtless this route would be used for the movement of this coal. Again if the Ohio River is improved and a canal is constructed from the Mississippi River to Lake Michigan, this route will be used for the movement of coal from the upper Ohio region and the Illinois field to points along the Ohio and Mississippi rivers and also to the industrial center about Chicago. The southern coal stream does not as yet promise to be large. In discussing the iron ore streams only one is important for our purpose, namely, the southeast stream. This we find is already supplied for the most part with water transportation by the Great Lakes to the Chicago-Gary district and to the Cleveland-Ashtabula district. However a canal, if again built in the extreme eastern part of Ohio, would be able to carry the ore to the Pittsburg district. The streams of traffic of farm products, so far as they are pronounced, are to the east in the North and to the south or east in the South. In the first case the Great Lakes already supply a water route which is not extensively used, and in the South the rivers are not much less used. Many of the farm products are not suitable for water transportation, such for example as food animals, dairy products,

and flour; but, most important of all, the streams of traffic of food products are becoming so numerous and so much smaller as to the quantity of traffic over each stream that water routes are not found in the proper places. The streams of traffic made up of semi-manufactured goods, such as oil, lumber, and clay products, are so numerous as to defy analysis; but in some cases, such as the clay products of Ohio, the waterway will doubtless be of importance. The streams of traffic of manufactured and semi-manufactured goods are becoming so numerous and consequently so small as population equilibrium comes about that waterways can serve less well as means of transporting these goods, notwithstanding that their bulk and suitability for distribution from centers otherwise make them a proper class of goods for water transport. Some adherents of water transportation seem sometimes to forget two elementary facts; first, that waterways are limited to those regions where there is a natural water supply; second, that while certain commodities can be moved most cheaply by water, the water route does not always lead to a market.

The improved waterway is to be a through transportation route because the means of local transportation are either now supplied or promised by more satisfactory and efficient methods. The steam railway has in those cases where there is a relatively high value density of traffic solved the problem. In other cases the adaptable interurban, with electric, gasoline, or other motive force, has supplied the need. Except where population density is great, there will probably not be a great extension of the railway, whatever the motive power be. The greatest reliance for local transportation routes will be placed in the improved highway with the vehicle moved by mechanical power. Just as we realized the greater adaptability and suitability of the railway seventy years ago, so we are coming to realize the potentialities of the improved highway and the motor vehicle as a means of transporting traffic over local routes. They are to serve equally well for passenger business with the single vehicle, or for freight business with a train of vehicles, moved by a single unit of power. The cost of construction is relatively low and the benefits from the establishment of the route immediately and generally are secured by the community which constructs it. The large operating company has not yet appeared in this country, but no such unification of the operating forces will be demanded as in the case of rail and water trans-

portation since the motive force is as equally useable on the farm as on the road.

We shall not favor the construction of internal waterways so much because they will relieve the congestion of traffic, for the congestion of which there is now complaint is not so much on the line as at the end of the line. The water fronts in our industrial centers are now well occupied and the existence of an inland system of waterways will not add greatly to our terminal facilities. Nor shall we delude ourselves into believing that a justification for improved waterways will be that they will be a means of controlling rates on railways. We have already been guilty of enough errors of the forum in our thinking on the railway rate problem without assuming that absolute cheapness is the determinant factor in the movement of traffic.

The canal is to be a part of through transportation routes, and the carriage of goods between local points will be insignificant. With the improved river it is to be a route over which the surplus traffic of a certain character from the railways will move.

Since these canals are to be a part of a system of transportation, the coördination of the parts of the system will demand careful thought. Too careful investigation of the inland waterway question in the relation of its parts to each other, and in its broader relation to railways and improved highways, can not be made. Past experience should have taught us the folly of placing into operation imperfectly thought out plans. Yet our past history of internal improvements and our political system with its opportunity of determining appropriations on the basis of the degree of pressure from local constituencies give no assurance that efficient expenditures will be made. The enthusiastic supporter of canals is as certain in 1910 as his predecessor was in 1820 that his proposal should be immediately carried out. The enormous expenditure demanded is not a question to be decided by the comparatively few residing or having property interests along the line of the proposed expenditure.

Already the vision of ship canals in many sections, which many of the friends of internal waterways had seen, has faded away after an investigation of their possibility and advisability has been made. It is probable that both on our improved rivers and canals the towed barge will be the vehicle chosen to transport the goods. A unit of power in a towing system is more efficient than in single

self-propelled boats for the character of the traffic which will move over these waterways.

Again, even assuming that a ship canal could be constructed in some regions, the water stage in the chief part of the route—the river—would not make possible a continuation of the journey by the larger boat. A large cost for transferring the load would be incurred which neither the character of the load makes easy nor its destination makes desirable. If however there is a combination of the parts of the route, no transfer will be necessary, and a single tug boat could move a train of barges uninterruptedly long distances, say from Cleveland to New Orleans. This will mean not only a saving in cost of conducting the business but also a lower cost of construction for the less deep canal. Doubtless we shall not rush into the work of constructing canals, but will further divorce the internal waterway question from politics and leave the decision of the routes to such impartial technical experts as will know what routes are possible, and to such industrial experts as will know what routes are practicable. That is to say, the two questions which need answers are: (1) can a canal be built and if so how deep should it be? (2) is there any traffic to move over the proposed canal? We shall not be deterred from entering into the project on account of the great cost involved for we have already had a too expensive lesson in building waterways for the immediate future.